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SHORT COMMUNICATION

ISOLATION OF 1-OCTACOSANOL FROM *EUPHORBIA COROLLATA*

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Abstract—1-Octacosanol ($C_{28}H_{57}OH$) is found to be the alcohol commonly isolated from *Euphorbia* species.

In the course of investigations on the terpenes in the various *Euphorbia* species, some workers[1-4] have encountered a long-chain fatty alcohol which was characterized as ceryl alcohol (1-hexacosanol). These identifications were based on m.p., mixed m.p. with an authentic sample, CH analysis, and/or conversion to the acetate.

During our work with *E. corollata* L. (flowering spurge) (*Euphorbiaceae*) we also isolated a crystalline alcohol identified as ceryl alcohol because its i.r. spectrum, m.p., undepressed mixed m.p. with authentic* 1-hexacosanol, and m.p. of its acetate. However, when the material was subjected to GLC, it had a longer retention time than authentic 1-hexacosanol. By comparing the retention time data we concluded that the alcohol obtained from the plant was 1-octacosanol in spite of the physical data. This assumption was confirmed by mass spectral analysis.† The resulting spectrum was typical for a long-chain alcohol of this type exhibiting peaks of 392 (M-18), 390 (M-20), 364 (M-46), and at masses separated by 14 mass units and increasing in intensity toward the lower end of the spectrum.

It appears, then, that the alcohol commonly found in *Euphorbia* species and reported as being 1-hexacosanol is actually 1-octacosanol. The previous criteria, as m.p., mixed m.p., and analyses, are misleading since the m.ps of both are somewhat similar, a mixed m.p. is not depressed, and the analyses reported could equally well fit the C-28 alcohol.

EXPERIMENTAL

M.ps. were taken on a Fisher–Johns apparatus and are corrected. Alumina used was Alcoa F-20 neutralized with aqueous acetic acid (3 ml 10% aq. HOAc/100 g Al_2O_3). Silica gel HF_{254} (Merck AG) was used for TLC. All solvents were redistilled in glass systems.

Isolation. The plant material was collected during June 1968, near Oregon, Illinois. The whole plant was dried, ground and exhaustively extracted with hexane in a Soxhlet.

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* Purchased from K K Laboratories, Plainview, N.Y., U.S.A.

† Mass spectra were obtained on a Perkin-Elmer-Hitachi RMU-6E instrument.

[1] B. P. Pradhan and H. N. Khastgir, *J. Indian Chem. Soc.* **46**, 331 (1969).

[2] A. N. Starrat, *Phytochem.* **5**, 1347 (1966).

[3] A. N. Starrat, *Phytochem.* **8**, 795 (1969).

[4] N. R. Farnsworth, H. Wagner, L. Hörhammer, H. P. Hörhammer and H. H. S. S. Fong, *J. Pharm. Sci.* **57**, 933 (1968).

Part of the extract (23 g) was chromatographed on 460 g of alumina. The column was eluted with 25 l. fractions of hexane, 5 l. fractions of 2% benzene in hexane, and 11 l. fractions of 5% benzene in hexane. TLC indicated that the alcohol was present in fractions 10–35. Fraction 12 (200 mg) was further separated on three preparative thin layer plates (0·5 mm) with 35% ethyl acetate–benzene. The major zone (R_f *ca.* 0·4) was collected, and the material recovered with $CHCl_3$. Recrystalization of the octacosanol from $CHCl_3$ gave plates; m.p. 79–81·5° (reported[4] for hexacosanol m.p. 76·5–77°; for octacosanol[5] m.p. 83·4°). A mixed m.p. with 1-hexacosanol was 79–81°.

The acetate of the 1-octacosanol was prepared with acetic anhydride–pyridine. Recrystallization from $CHCl_3$–methanol gave m.p. 65–66° (reported[6] for 1-hexacosanol acetate m.p. 65°).

Gas chromatography. A Varian Aerograph Series 200 instrument with a flame ionization detector was used. The chromatography was done at a sensitivity of 10^{-9} on a 5 ft $\frac{1}{8}$ in. SS column packed with 5% SE-30 on acid-washed dmcs 60/80 Chromosorb W. The detector temperature was 340°, the injection port at 290°, and the column at 235°. Gas flow was 80% of flow at 65 p.s.i.

The retention time of the isolated octacosanol was 650 sec with a minor impurity appearing at 275 sec. Authentic ceryl alcohol had a retention time of 380 sec.

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[5] P. G. STECHER (editor), *The Merck Index*, p. 754, Merck and Co., Rahway (1968).

[6] ANON., *Dictionary of Organic Compounds*, Vol. 3, p. 1590, Oxford University Press, Oxford (1965).